

## GENE SIGNATURE FOR PREDICTING SOLID TUMORS PATIENT PROGNOSIS

### SUMMARY

The National Cancer Institute's Laboratory of Human Carcinogenesis seeks parties to license or co-develop a method of predicting the prognosis of a patient diagnosed with hepatocellular carcinoma (HCC) or breast cancer by detecting expression of one or more cancer-associated genes, and a method of identifying an agent for use in treating HCC.

### REFERENCE NUMBER

E-024-2009

### PRODUCT TYPE

- Diagnostics

### KEYWORDS

- prognostic
- biomarker
- hepatocellular carcinoma
- HCC
- driver gene, gene signature

### COLLABORATION OPPORTUNITY

This invention is available for licensing and co-development.

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### DESCRIPTION OF TECHNOLOGY

HCC is the most frequent malignant tumor in the liver and the third leading cause of cancer death worldwide. A progressive sequence of somatic mutations and epigenetic changes of oncogenes or tumor suppressor genes are believed to cause tumor development. However, high genomic instability in tumors causes the accumulation of genomic aberrations that do not contribute to tumor progression. Therefore, it is important to distinguish between "driver" mutations that are functionally important and "passenger" mutations that do not provide a selective advantage to the tumor cells.

The current invention describes a driver gene signature for predicting survival in patients with solid malignancies including HCC and breast cancer. The gene signature includes ten cancer-associated genes,

and the NIH researchers further discovered that a decrease in DNA copy number or mRNA expression of some genes is associated with poor prognosis in HCC tumors and breast cancer, while a decrease in DNA copy number or mRNA expression of a few other genes is associated with good prognosis. They have also demonstrated that at least four of these cancer-associated genes are functional tumor suppressor genes. Thus, these genes may be potential molecular targets of HCC and breast cancer.

## **POTENTIAL COMMERCIAL APPLICATIONS**

- Prognosis for hepatocellular carcinoma (HCC) and breast cancer patient survival.
- Potential new method to identify therapeutic treatment for HCC and breast cancer patients.

## **COMPETITIVE ADVANTAGES**

- A novel prognostic tool for HCC and breast cancer patients.

## **INVENTOR(S)**

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## **DEVELOPMENT STAGE**

- Pre-clinical (in vivo)

## **PATENT STATUS**

- **U.S. Filed:** Application No. 13/127,701 filed 04 May 2011
- **Foreign Filed:** EP Application # 9752261 (11 Oct. 2009)

## **RELATED TECHNOLOGIES**

- [E-101-2016 - A Gene-Based Prognostic for Hepatocellular Carcinoma Patient Response to Adjuvant Transcatheter Arterial Chemoembolization](#)
- E-209-2008
- E-215-2007

## **THERAPEUTIC AREA**

- Cancer/Neoplasm